EXPLANATION OF SIGNIFICANT DIFFERENCES

IN THE RECORD OF DECISION

SOLID STATE CIRCUITS SITE

REPUBLIC, MISSOURI

PREPARED BY:

Missouri Department of Natural Resources/

Hazardous Waste Program

Jefferson City, Missouri

September 2004

INTRODUCTION

This Explanation of Significant Differences (ESD) presents the rationale for modifying the selected remedy identified in the Record of Decision (ROD) for the Solid State Circuits (SSC) Site. This ESD was prepared in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and Section 300.435(c)(2)(I) of the National Contingency Plan (NCP). Section 117(c) of CERCLA provides, in relevant part, that "After adoption of a final remedial action plan ... if any remedial action is taken ... or if any settlement or consent decree under Section 9606 of this title ... is entered into, and if such action, settlement or decree differs in any significant respects from the final plan, the President ... shall publish an explanation of the significant differences and the reasons such changes were made."

A final remedial action for the SSC Site was adopted in the ROD signed by the U. S. Environmental Protection Agency (USEPA) on September 27, 1989. On May 31, 1991, the United States District Court for the Western District of Missouri approved a Consent Decree/Statement of Work (CD/SOW) involving the defendant, SSC. The CD/SOW sets forth the requirements for implementing the remedy. The chosen remedy is a groundwater remediation and hydraulic control remedy utilizing a pump and treat system to prevent migration of contaminants away from the SSC Site. The remedy includes groundwater extraction wells, an onsite treatment plant, and monitoring wells to verify compliance with the performance standards set forth in the CD/SOW.

The first Five-year Review (September of 1996) allowed for a thorough review and evaluation of the site's chosen remedy. Shortly thereafter the potentially responsible party (PRP) submitted a request to explore innovative technologies to enhance the site's groundwater remediation. Based on the evaluation of the various innovative technologies, the installation and operation of a horizontal well to enhance the remediation of the trichloroethylene (TCE) plume within the unconsolidated/fractured bedrock (USFB) was recommended. With approval, numerous studies determined the horizontal well enhanced the remedial process. It is the permanent use of the horizontal well to enhance the remediation of the TCE plume within the USFB that the department is recommending in this ESD.

This ESD will become part of the Administrative Record pursuant to Section 300.825(a)(2) of the NCP. The Administrative Record for the SSC Site is located in the Republic Branch Library, 1264 US Highway 60 East, Republic, Missouri 65738.

SITE HISTORY

The Solid State Circuits (SSC) Site is located on the southeast corner of Main and Elm Streets in Republic, Greene County, Missouri (Figure 1). The site is less than an acre in size and is enclosed within a six-foot high chain link fence.

The SSC Site is a former industrial/manufacturing site. The site, with a long and unclear history, was used by a number of businesses and little is known about the chemicals they used. SSC manufactured printed circuit boards onsite from 1968 through November 1973 in the building's northern end and used volatile organic compounds (VOCs) and metals in the manufacturing process. Due to a lack of records, a reliable estimate of the volume of VOCs and metals used is not available.

In June 1982, the Missouri Department of Natural Resources collected water samples from Republic's three municipal wells as part of a nationwide organic chemical survey and found TCE in Municipal Well Number 1 (CW-1). In 1983 Republic discontinued using CW-1.

On February 22, 1985, the SSC Site was placed on Missouri "Registry." Currently the SSC Site is classified as a Class IV, which indicates a site is properly closed but requires continued management. On October 7, 1985, the department assumed the long-term remedial action (RA) responsibility of the SSC Site. The SSC Site was listed on the National Priorities List (NPL) on June 10, 1986.

Between April 1983 and the completion of the Remedial Investigation/Feasibility Study (RI/FS) in July 1989, the USEPA and the department conducted multiple remedial and removal response actions. These response actions were conducted to identify the contaminant sources on-site, off-site, and in CW-1. The response actions included the delineation of on-site and off-site soil, surface water, and groundwater contamination. The on-site contaminated soil and debris was excavated and disposed off-site under the removal actions.

The ROD for the SSC Site was signed on September 27, 1989. The selected remedy addressed only the contamination of the three-groundwater aquifers because previous response actions had removed the contaminated soil, which was the source of the continuing contamination. The groundwater aquifers are within a sequence of three hydrogeologic units (upper to lower) – the USFB, the unfractured shallow bedrock (SBR), and the deep bedrock (DBR).

The major components of the selected remedy include:

- Extraction of the contaminated groundwater (from the three groundwater aquifers) using existing and new extraction wells;
- On-site treatment (pump and treat system) of the extracted groundwater using two existing air strippers (to achieve groundwater cleanup levels);
- Discharge of treated water to the city of Republic sewer system to receive further treatment at the Publicly Owned Treatment Works (POTW);
- City ordinance to prevent construction of drinking wells (by review and change, if necessary, of the planned location of such wells) in or near the contaminated groundwater plumes; and
- Continued monitoring (ongoing chemical quality and hydraulic performance monitoring) and data collection, ongoing annual agency site inspections, and the completion of five-year reviews to assess site conditions, contaminant distribution, and any associated site hazards as outlined in the ROD and to determine the effectiveness of the remedy.

On December 13, 1989, Remedial Design (RD)/RA negotiations began. Upon completion of negotiations, the PRPs with the agencies oversight completed the RD/RA. Part of the RD/RA requirements were to design a system to do ongoing chemical quality and hydraulic performance monitoring of all water, including treated water leaving the site. The site's monitoring system allows for this, whether the treated water is diverted (on-site) to the horizontal well or travels off-site to the POTW. On December 22, 1992, the approval of the 100 percent RD Document Package by the agencies initiated Operation and Maintenance (O&M) for the SSC Site.

BASIS FOR THE DOCUMENT

Groundwater has always been the source of Republic's water supply system. There are three groundwater aquifers underlying the SSC Site - the USFB, SBR, and DBR. The groundwater in the aquifers flow southward along Main Street from the SSC Site towards Roberts Spring. The only TCE contaminated municipal well, CW-1, was taken out of service after July 1983. Republic's CW-2, which was not contaminated, was closed in the fall of 1997. Currently,

municipal wells CW-3, CW-4, and CW-5, which have remained clean, supply Republic's drinking water needs (Figure 1).

The ROD and CD/SOW specify the site's treated water should be discharged to Republic's sewer system, which in turn transports the treated water to Republic's POTW to receive further treatment. In spring 1997, the PRPs submitted a request to explore innovative technologies to assist in the cleanup of the TCE contaminated groundwater in the USFB.

In July 1997, the PRPs proposed to use a horizontal well (innovative technology) to assist in the remediation of the TCE. The horizontal well diverts a small volume of the treated water, before discharge into the sewer system, and re-introduces it into the UFSB. This action acts as a flushing mechanism; thus enhancing the extraction of the UFSB's TCE groundwater plume.

After the installation and initial testing of the horizontal well, the PRPs conducted a successful one-year pilot study. The study determined the diversion of a small volume (about 5 gpm) of treated water via the horizontal well assisted in the flushing of TCE contamination out of the UFSB and maintained hydraulic control. The volume (about 5 gpm) of treated water will not cause a significant change in the volume (about 70 gpm) of treated water going to the POTW for final treatment. As with all other treated water, this treated water will be part of the ongoing chemical quality and hydraulic performance monitoring for the site. On June 30, 2003, the department with USEPA concurrence approved the continued use of the horizontal well.

DESCRIPTION OF SIGNIFICANT DIFFERENCES

The PRPs through the one-year pilot study successfully demonstrated to the agencies that the diversion of a small volume (about 5 gpm) of treated water via the horizontal well, from the POTW, will assist in the remediation of the USFB. This change in the volume (reduced by about 5 gpm) does not fundamentally alter the remedy selected in the ROD with respect to scope, performance, or cost.

Use of the Horizontal Well

The use of the horizontal well will not change the scope of the remedy since the diverted, treated water must meet the same chemical and hydraulic criteria as the treated water going to the POTW.

SUPPORT AGENCY COMMENTS

The USEPA concurs with this ESD for the SSC Site.

STATUTORY DETERMINATIONS

Considering the new information that has been developed and the changes that have been made to the selected remedy, the department believes the remedy still satisfies CERCLA §121: "remains protective of human health and the environment, complies with federal and state requirements that were identified in the ROD as applicable or relevant and appropriate to this remedial action at the time original ROD was signed, and is cost effective." In addition, the revised remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practical for the SSC Site.

PUBLIC PARTICITATION COMPLIANCE

A notice of the ESD will be published in the Republic Monitor. The documents on which the decision was made to change components of the selected remedy will be placed in the Administrative Record in the Republic Branch Library, 1264 US Highway 60 East, Republic, Missouri 65738. These documents will be available for public review and comment. Comments should be addressed to:

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James D. Werner
Director, Air and Land Protection Division
Missouri Department of Natural Resources

8/18/04
Date

Cecilia Tapia
Director, Superfund Division
U. S. Environmental Protection Agency
Region VII

9/27/04
Date

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

27 SEP 2004

MEMORANDUM

SUBJECT: Explanation of Significant Differences
Solid State Circuits Site, Republic, Missouri

FROM: Steve Auchterlonie, Remedial Project Manager
Missouri/Kansas Remedial Branch

THRU: Robert Richards
Regional Counsel

Steve Kovac, Chief
Missouri/Kansas Remedial Branch

TO: Cecilia Tapia, Director
Superfund Division

A Record of Decision (ROD) was originally signed for the Solid State Circuits site in September 1989. The chosen remedy was designed, constructed, and implemented by the responsible party pursuant to a 1991 Consent Decree co-signed by the Missouri Department of Natural Resources (MDNR) and the Environmental Protection Agency (EPA). The ROD specifies that the treated water would be sent to Republic's Publicly Owned Treatment Works (POTW) via the sewer system. In 1997, the responsible party proposed the use of a horizontal well to assist in the remediation of the unconsolidated/fractured bedrock (USFB) by diverting small volumes of treated water and re-introducing it into the USFB to flush contaminants through the USFB. The MDNR and EPA agreed to the proposal as a pilot program.

Attached for your approval is the Explanation of Significant Differences (ESD) written by MDNR, the lead enforcement agency for the site. This ESD was prepared in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). It presents the rationale for permanently diverting small amounts (about five gallons per minute) of treated water from the POTW to the USFB via the horizontal well.

The MDNR will publish a notice of the ESD in the local paper, the Republic Monitor. Both the ESD and the supporting information will be available for public review.

Attachment